DOCUMENT RESUME

ED 315 220 RC 017 276

AUTHOR	Burpee, Peter; And Others
TITLE	Electronic Mail in Distance Education: A Canadian Perspective.
PUB DATE	Mar 89
NOTE	10p.; In: Education and the Changing Rural Community: Anticipating the 21st Century. Proceedings of the 1989 ACRES/NRSSC Symposium. See RC 017 257.
PUB TYPE	Reports - Descriptive (141) -- Speeches/Conference Papers (150)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Correspondence Study; *Electronic Mail; Elementary Secondary Education; Foreign Countries; Home Study; Online Systems; Postsecondary Education; Rural Areas; *Rural Education; Teacher Student Relationship; Telephone Communications Systems
IDENTIFIERS	*Canada

ABSTRACT

Electronic mail is the sending of messages from one person to another using electronic technology. This paper discusses communication through a personal computer and the commercial electronic mail service. Basic information about the technology of electronic mail is provided, such as hardware and software, subscription and options of electronic mail services, and message or file processing. Education in remote rural Canada has benefited from electronic mail in several aspects: (1) for correspondence courses in distance education programs, interaction between the tutor and learner is enhanced due to the immediacy of the new technology; (2)convenience and privacy of communication are improved by using a personal computer at home; and (3) reasonable costs are affordable for students ($20 per year). Particularly, the learner-tutor relationship is improved. Because of the higher speed of the on-going dialogue (from weeks by post service to days by electronic mail, for a round-trip message), the student learns more actively and can share peers' ideas and experiences. Education switches from a teacher-centered mode to a learner-centered one, as students can learn independently of any class at a pace determined by them. Problems in communication may occur however, when the telephone system does not function well. Another problem is the poorly advertised electronic directory, which makes accessing subscribers' addresses difficult. (GGH)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

ED315220

Peter Burpee, Brenda Wilson, Cheryl Aumndsen
McGill University, Montreal, Canada

Electronic Mail in Distance Education: A Canadian Perspective

Distance Education and Electronic Communications

> TeleSat Canada, the national satellite carrier established the first domestic geostationary satellite communications system, Anik A, in 1973... At the same time, the growth of online and time-shared services in the late 60's and early 70's began moving the computer industry throughout the world into the communications field. The rapid development of microelectronics in the 1970's brought a host of intelligent terminals such as personal computers, word processors and computer-assisted design workstations and robots to complete this revolution. (Communications Canada, 1987).

Despite population distribution and the sheer size of the country, it has taken less than two decades for electronic communications to become a matter of priority in Canada. Since most of the population of Canada is located adjacent to the Canada/United States border, vast areas to the north are sparcely populated. Beyond this urban belt, the rural population is highly dispersed, and some regions are hard to reach except by air.

The most remote region is the subarctic and arctic, where there are neither roads nor rail. Small regional airlines are the main carriers. Winter storms in the north, and fog in the maritime regions, frequently create difficult flying conditions. It is not unusual for a village airstrip to be closed for many days at a time. Even when the weather is favourable, there may be disruptions to the air service caused by emergencies such as medical evacuations, a system of flying judges who bring the courts to remote communities, etc.

Regular mail service, therefore, is understandably irregular, unpredictable and slow. A package may commonly take two or three weeks to arrive, even when carried by air, and letters may take anywhere from three days to two weeks. The incidence of accidental loss of mail is sufficiently high to make ordinary mail service unreliable. Only by paying more for Special Delivery for which mail is tracked from post office to destination, can letters and parcels be sent with any reasonable certainty of their arrival. For all these reasons, as soon as fast, reliable electronic communications transmission became available, remote northern school boards were quick to avail themselves of this welcome alternative to a slow and unreliable postal service.

For example, in 1980 the Kativik School Board which serves the Inuit population of northern Quebec introduced FAX transmission for internal correspondence between its administrative office located in Montreal, and its eleven schools scattered along the coasts of Hudson Bay and Ungava Bay. Messages can now be sent in minutes that had previously taken days or even weeks by courier or regular mail, and at a lower cost

RC017276

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Peter Burpee
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

BEST COPY AVAILABLE

than long distance telephone calls. Commercial electronic mail services, first introduced in Canada in the late 1970's, became implemented by remote school boards by 1987, and these now link schools in many other distant parts of the country.

Electronic Mail

As the name implies, electronic mail is the sending of messages from one person to another using electronic technology. This broad term encompasses telex, facsimile (FAX) transmission, computer conferencing, voice mail systems and services such as EnvoyPost which in Canada is a hybrid of electronic mail and a postal letter. For the purposes of this paper, electronic mail refers more narrowly to messages entered from a personal computer, transmitted to the intermediate commercial electronic mail service, and later read by the receiver at his/her convenience using another personal computer.

Electronic mail requires the use of a personal computer, a modem, and access to an electronic mail service. Any type of personal computer may be used. In fact, electronic mail is one means of conveniently sending text files from one type of computer to another. By using communications software, the home computer is modified to act as a 'dumb' terminal, or it may emulate a terminal with special function keys, or a specific kind of terminal such as a teletype terminal. Some communications software available today virtually automate the process of calling up an electronic mail service, reading and printing mail, and sending messages with little intervention from the user.

Subscribers to electronic mail services are assigned 'addresses' and passwords with which to identify themselves. The addresses may or may not conform to the international X-400 protocol which permits sending/receiving messages between other systems at home or abroad. Sending a message always requires knowing the other person's address.

Messages may be entered directly from the computer keyboard, or through a word processor. With the latter, the message must be saved and sent as a text or ASCII file. When messages are received by the electronic mail service, they are temporarily stored in a central computer under the specified 'address' until 'read'. To read electronic mail, the recipient must also be a subscriber.

Writing longer messages or assignments with a word processor is preferable for distance education courses since text is more easily revised and amended before sending. Considered writing of messages and corrected typing errors are naturally preferred over roughly expressed, disorganized writing replete with extraneous letters and confused spelling straight from the keyboard.

In Canada, text messages are sent to commercial electronic mail services through Datapac, a packet switching system for sending data over the telephone system. When compared to ordinary voice transmission, packet switching systems reduce the cost of message transmission. Transmission speeds are flexible at any of 300, 1200 or 2400 baud. However, higher

speeds, static and extraneous 'noise' result in occasional message loss or errors.

Commercial electronic mail services provide the sender with many useful options. Depending on the service, it is possible to:

a. verify that a message has been sent as requested
b. verify that a message has been received (and when)
c. send a message at a specified time or date
d. send an immediate reply to a message
e. create a 'list' of addresses to which a message may be sent
f. send binary files (eg. a graphics file, or a Logo program)
g. receive an itemized expense list on a monthly basis.

Electronic Mail Services in Canada

Three commercial electronic mail services are available in Canada:

a. Envoy 100 provides only electronic mail service. This service charges by the length of the message. There are separate charges for composing as well as for sending messages. The subscriber is also charged for screen information such as menus and bulletin board messages. A non-interactive option allows the user to compose a message off-line with a word processor, and be charged only once when sending. Because Envoy does not provide its own customized communications software, the user must purchase a commercial package.
b. Immedia is similar to Envoy 100, and charges by message length. Since composing always takes place off-line, Immedia charges only for sending and reading a message. Immedia is also capable of sending binary files. Immedia offers a custom MS-DOS communications software which fully automates the process of logging on, and message sending/receiving.
c. iNET 2000, of which Envoy 100 is a subset, offers access to hundreds of databases in Canada and the United States. This service charges for time spent on-line when sending and receiving messages, and variably for databases access. Like Immedia, iNET can send binary files. No customized communications software is available. iNET has an "associate option" which permits an organization to administer its own system, such as opening and closing mailboxes without charge, or providing internal bulletin board messages.

Because all three services use Datapac and 800- numbers, their great advantage is accessability from any location in Canada without additional long-distance charges to the learner. A service may allow 'open' or 'closed' access for institutions and companies. At an additional cost, an institution may become an associate user and waive the initial sign-up fee for individual users, and also provide bulletin board information.

Implications for Distance Education

If all learners had their own computers and modems, the implications for correspondence courses in distance education programmes would be considerable. Apart from course materials which must always be sent by regular mail, virtually all communications between learner and tutor takes place by way of electronic mail. Assignments, progress reports, requests for help, and on-going course discussion benefit by the immediacy of electronic mail. This quality of immediacy greatly reduces the frustration of slow response inherent in any correspondence course. However, the reality is that only a small proportion of distance learners have ready access to computers and modems, and therefore opportunities for incorporating electronic mail service into correspondence programmes are generally limited.

The University of Waterloo's new business management programme has circumvented this problem by having 50 lap-top computers available for lending to students. The McGill University Home Study programme takes advantage of computers already installed in schools across the country for its courses. Although not all have modems, the incidence of school modems in remote communities is high and growing rapidly. As well, most schools across the north already rely on electronic mail for inter-board communications, and this means that teachers can be easily reached for distance education courses.

The optimal situation is when the learner can send and receive messages from home. This is the advantage of the Waterloo programme where learners can borrow lap-top computers (though with a $600 deposit against loss or damage). A home computer serves two purposes: a tool for the course, and a messaging device for communications. For messaging, the learner enjoys the convenience of accessing the electronic mail service at any time, and may do so in the privacy of his home.

Where it is assumed learners are teachers who will use computers located in schools rather than in the home, there are often serious impediments to ease of use. For example, the modem is often located in the principal's office where its primary function is board-to-school messages. This arrangement can bring unease to both parties since in the case of both the principal and the learner (an employee working under the principal), messages are likely to be considered confidential, or at least, not for public reading. Everyone wants to share praise, but what learner wants his/her principal to have first reading of criticism arriving over the email system from a tutor ? The communications computer may sometimes differ from the computer used for assignments, meaning that outgoing messages must be transcribed, often by a third-party such as a secretary (and secretaries are not always willing to cooperate). Lastly, the office computer with its modem is often located at some distance from the school equipment used by learners for their courses. These practical factors add to frustration and nervous concerns for learners, and may inhibit their satisfaction with distance learning.

Operating Expenses for Electronic Mail Services

Apart from basic equipment expenses such as modem and communications software purchase, there are monthly charges for sending and receiving messages. Students are expected to pay their personal electronic mail expenses, though in most cases this expense is absorbed by their own schools. Electronic mail costs are reasonable. From our experience based on the first year of operation, the per student cost was just under $ 20. for mail from McGill tutors and the programme coordinator to the students.

Electronic Mail: Effect on Learner-Tutor Relations

One of the more important functions of electronic mail in a distance education programme is the ability to send regular reports from the student to the tutor. These do much to simulate the on-going dialogue between student and lecturer in class. A weekly progress report, sent on behalf of a group of learners in a remote community, keeps the tutor informed about how each member is faring, and provides a convenient forum for raising problems and airing successes. In turn, the tutor may send a report of his/her own by sharing information and experience between learners, clarifying points, adding examples or adding a personal touch. Where distance education learners are 'added' to a small Continuing Education class, the class can report back to the distance education group. There are sometimes administrative matters that are raised through the weekly report such as when marks or fee receipts will be sent. Finally, the weekly report helps tutors to identify inactive learners and flag the individual as a potential drop-out at an early stage. In some cases, the tutor may be able to provide help and encouragement for those who might otherwise give up.

Where regular mail is slow (is it quick anywhere ?), learners and institutions are well aware of major delays between sending assignments and receiving detailed comments from the course tutor. This delay becomes serious when assignment intervals are less than turn-around time. In other words, when assignment 3 must be sent before the tutor is able to return comments about assignment 2, and thereby depriving the learner of comments that might impinge upon the successful completion of assignment 3. The learner is then placed in the position of working uncertainly towards objectives sometimes defined in real terms by marks and written comments from the tutor.

Electronic mail clearly reduces the time gap from weeks to days where the tutor has the time and commitment to reply within a day or two of receiving an assignment. In this respect, a tutor who takes longer than a day or two may be severely censored by learners whose expectations of receiving a response to assignments are obviously conditioned by the speed of sending electronic mail messages.

Since messages are sent by computer, it is safe to assume that assignments are generally written with a word processing program and received by the tutor as text files. Although a paper copy may be printed by the tutor on receipt, this is reasonable only for printing

one or two page assignments. For longer papers, this time-consuming task can add hours and has been found to be a source of complaint amongst tutors. Assignments may also be sent to other learners in the group, though this may impose a communications expense which should be weighed carefully. Some learners are more verbose than others, and others simply believe that longer assignments are bound to receive higher marks than short ones. When assignments are shared between learners, a tutor may base a further assignment or mark upon reaction to the initial papers. The tutor may also react to an initial assignment submitted as an intermediate step leading to a revised final copy.

Depending on the nature of the assignment, many learners are very pleased to receive work done by their peers, especially creative work for which there may be immediate applications. Teachers fall into this category, and most are willing to share their efforts with their peers.

As well as text files, some electronic mail services have the ability to send binary files. Binary files open other opportunities, chiefly sending graphics files and programming language files. Graphics files are important in the Canadian North to the Inuit and Cree Indian people where script is based on syllabic characters rather than the Roman alphabet. Programming language files are useful for courses such as BASIC, Pascal or Logo. When received, they are saved on disk and can be run by the tutor to assess the performance of the program. However, since a paper copy obviously does not accompany the program, the code must be printed by the tutor. As pointed out earlier, printing computer files may be unreasonably time-consuming when this task must be done individually for each member of a large group.

From another perspective, the rule that allows distance learners to work from their homes anywhere in the country applies equally well to tutors. This can have great advantages for part-time tutors or those with home responsibilities. Correspondence courses with electronic mail can also open opportunities for qualified individuals who themselves live in a remote part of the country. There is no reason why a course could not be offered to learners scattered through Labrador, northern Quebec, the Northwest Territories and the Yukon, with the tutor located in an small Newfoundland village, and the course administered from a Montreal university.

In our experience, regular electronic mail communication enhances the working relationship between learner and tutor. In the university classroom, instruction is commonly expository and teacher-centered. In correspondence courses, especially those that are print-based, instruction shifts towards a learner-centered model in which the tutor's role is primarily that of offering support and guidance. Students learn independently of any class at a pace determined by them. Even though, courses may be delivered through lectures on audio or video tapes, the actual presence of the instructor is absent, and there can be no direct interaction between instructor and learner in conventional terms. On the other hand, the learner may enjoy a stronger relationship with the tutor than is ordinarily possible in large classes.

With electronic mail, communications is often on a one-to-one basis. Even reticent students, who through quietness are scarcely known to their university instructors, assume a different personality to their tutors with whom they correspond electronically. Moreover, their access to their tutors is privileged through electronic mail, and they can reasonably anticipate quick and considered assistance on a more personal level than is found in most undergraduate courses on a university campus.

Electronic Mail: Some Technical Problems

Northern regions, which rely upon satellite communications, are especially prone to faulty telephone reception and transmission. Transmission errors would be an even more serious problem except that commercial electronic mail services normally use error checking protocols. Through these protocols, each character of a message sent from the sender to the central computer is verified for accuracy; if incorrect, the home computer is instructed to re-transmit the character until correct. Even so, messages sometimes arrive at their destination in a truncated condition, having been cut short at some point by a transmission error. For example, a period (.) at the beginning of a line signals Envoy to send a message. If a period accidentally appears, the message abruptly terminates at this point. This problem is generally resolved when the mystified receiver requests the sender to repeat the message.

Telephone service in some remote villages can be poor or unreliable. Breakdowns in communications, such as normal long-distance telephone transmission, can sometimes interrupt courses. Where these breakdowns are frequent, students may be altogether prevented from continuing or even taking distance education courses. More serious problems arise when computer equipment breaks down. In remote areas, replacement computers and modems are rarely available. Since faulty equipment must be shipped out for repairs, the need for repairing critical equipment can effectively suspend electronic mail messaging for several months.

Directory information is a problem. Unlike FAX information, electronic mail addresses are rarely advertised on letterhead or notices. Searching for new subscribers, and learning the addresses of subscribers already on the system depends upon a willingness of parties to disclose this information. In many cases, electronic mail addresses are regarded as confidential. Directory information which ought to be equivalent to looking up entries in a telephone book, can be confusing and frustrating under the best of circumstances. Listings are available for individuals, business or institutions, but in the case of Envoy 100, the classification procedure does not lend itself to searching institutional categories such as universities or schools. The Envoy 100 subscriber cannot search for Immedia addresses because there is no central electronic mail directory for the country. A message may be exchanged between Envoy 100 and iNET 2000 subscribers, but not with Immedia subscribers unless special arrangements are made (Immedia does not use X-400 protocol).

For distance education, there are two non-commercial alternatives to the three electronic mail services described above. The first is an in-house mail system operated on a mainframe computers and often available at many colleges and universities. The second is software produced for the purpose by a third party such as AT & T, and installed on a mini or mainframe computer. Both must be evaluated for ease of use in terms of documentation, screen appearance and support services (not always a strength of computer programmers developed services). Access may be either direct (modem to modem) or through Datapac. Installation of a telephone bridge may be required to handle many simultaneous outside calls. If individual outside users pay for their own expenses, secretarial time is needed for billing and keeping accounts.

Conclusion

Rapid changes in communications technology are being exploited in many different ways by distance education institutions around the world. In Canada, size and population distribution are principal reasons which account for the historic importance of communications in the growth of the country. The delivery of correspondence, radio and television-based courses evolved as their respective technologies became available. More recently, telephone transmission systems, computers, switches and television sets are progressively merging into a unified "machine", a development which is also helping change the face of distance education. Almost every household in Canada has a telephone. That one fact today implies access to a remarkable range of communication possibilities: FAX, electronic mail, voice conferencing, computer conferencing, access to information providers, and digitized video image reception.

Electronic mail enhances some aspects of traditional correspondence course effectiveness by greatly reducing the turn-around time of messages, reports, and assignments sent between the student and the tutor. Faster response time helps both to improve working relationships and to reduce frustrations when learners require help. The nature of electronic mail messaging in itself appears to create a feeling of working one-to-one with the tutor. Finally, assuming that computers, modems and telephone lines are available, the costs of incorporating electronic mail into a distance education programme are quite affordable.

Bibliography:

Burpee, P and Wilson.B
Report on the McGill Home Study Programme, 1987-88
Unpublished report, McGill University, 1988

Communications for the Twenty-First Century,
Communications Canada, Ottawa, 1987

Mugridge, I and Kaufman,D
Distance Educatiuon in Canada
Croom Helm, London, 1986

Perry, W and Rumble, G
A Short Guide to Distance Education
International Extension College, Cambridge, 1987